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WAR DEPARTMENT

BASIC FIELD MANUAL



Volume I

FIELD SERVICE POCKETBOOK

CHAPTER 2

PERSONAL HYGIENE AND FIRST AID

U.S. War Dept

BASIC FIELD MANUAL



VOLUME I FIELD SERVICE POCKETBOOK

CHAPTER 2 PERSONAL HYGIENE AND FIRST AID

PREPARED UNDER DIRECTION OF THE
CHIEF OF STAFF



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Chapter 2, Personal Hygiene and First Aid, Basic Field Manual, Volume I, Field Service Pocketbook, is published for the information and guidance of all concerned.

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BY ORDER OF THE SECRETARY OF WAR:

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FOREWORD

Basic Field Manual, Volume I, will be published in eight chapters, as follows:

- Chapter 1. Military Courtesy, Salutes, Honors, and Discipline.
2. Personal Hygiene and First Aid.
3. Equipment and Clothing.
4. Physical Training.
5. Map Reading and Conventional Signs in Common Use.
6. Military and Panoramic Sketching.
7. Aerial Photograph Reading.
8. Defense against Chemical Attack.

(III)

200

TABLE OF CONTENTS

	Paragraphs	Page
SECTION I. Personal hygiene-----	1- 7	1
II. First aid-----	8-31	7

(v)

BASIC FIELD MANUAL, VOLUME I

FIELD SERVICE POCKETBOOK

CHAPTER 2

PERSONAL HYGIENE AND FIRST AID

(The matter contained herein supersedes TR 112-5, Dec. 20, 1921 (including C1, Jan. 3, 1927, and C2, Jan. 3, 1928), and TR 113-5, Dec. 20, 1921.)

SECTION I

PERSONAL HYGIENE

1. Introduction.—Hygiene is the science of the preservation of health. Personal hygiene deals with the efforts each individual must put forth to keep in good physical condition and with the precautions he must take to protect himself from disease. Before being allowed to enlist in the Army, the soldier is given a thorough physical examination to determine the absence of disease, and it then becomes his duty to keep himself in the best physical condition. In doing so, attention to personal hygiene is especially important.

2. Importance of early medical treatment.—If at any time a soldier does not feel perfectly well or believes that he has contracted a disease, he should report at once to the first sergeant or to the noncommissioned officer in charge of quarters who will send him to a medical officer for examination. Self treatment should never be attempted since by so doing the individual may not only harm himself but may also become a source of danger to his comrades.

3. Causes of disease.—Most acute diseases and many chronic ones are caused by micro-organisms or viruses commonly called germs. The usual ways in which disease-producing germs gain entrance to the body are as follows:

a. By eating food or by drinking water or other liquids which contain the germs.

(1)

b. By breathing in certain germs which float in the air.

c. Through the skin, the germs having been injected into the body by the bites of mosquitoes, flies, lice, ticks, or fleas, or introduced through cuts, scratches, or abrasions.

d. By contact with diseased persons.

4. **Care of the body.**—*a. General.*—(1) An unclean body may be the cause of disease. Therefore the entire body should be bathed at least twice each week. The hands should always be washed before eating and after using the toilet. Where bathing facilities are not available, the body should frequently be scrubbed with a wet cloth, paying particular attention to arm pits, crotch, and feet.

(2) Underwear and shirts should be changed and washed at least twice a week. If water is not available, clothing should be crumpled up, shaken well, and exposed to the sun.

b. *Mouth.*—It is very important to brush the teeth at least twice a day, one of these brushings to occur before going to bed. In cleaning the teeth, brush the inside and outside surfaces away from the gums and toward the cutting surfaces. Particles of food between the teeth should be promptly removed, care being taken not to injure the gums.

c. *Feet.*—The most important factor in the marching ability of the soldier is the care of the feet. Important factors in the care of the feet are as follows:

(1) Only marching shoes issued by the Quartermaster Corps should be worn in the field and they must be properly fitted to the individual. (See par. 1, AR 600-35, and AR 850-125.)

(2) New shoes should be properly broken in before they are worn for marching purposes.

(3) Only woolen socks (light or heavy) should be worn habitually for marching. Cotton socks never should be worn unless specifically ordered by the surgeon.

(4) Darned socks or socks with holes in them should not be worn on the march.

(5) Socks should be large enough to permit free movement of the toes but not so loose as to permit wrinkling. They should be changed daily.

(6) Until the feet are hardened they should be dusted with foot powder before and after each day's march.

(7) After a long march, and as soon as possible after reaching camp, the feet should be washed (not soaked) with soap

and water and the soldier should then don clean socks and change his shoes.

(8) If blisters have appeared on the feet they should be painted with iodine and emptied by pricking them at the lower edge with a pin which has been passed through a flame. The blister should then be covered with zinc oxide plaster applied hot. Serious abrasions on the feet, corns, bunions, and ingrowing nails should be treated at the dispensary or aid station.

(9) The toe nails should be kept short and clean. They should be cut straight across, and not on a curve. If this precaution is observed, most of the troubles from ingrowing nails will be avoided.

5. Vermin.—*a.* Vermin such as body lice, which live in the clothing rather than on the body, pubic lice (crabs), and head lice, are the result of lack of personal cleanliness. They produce itching, discomfort, and disturbed rest in the persons whom they infest, and certain varieties, particularly the body louse, transmit serious diseases. Men having a persistent itching on the body or head should consult a medical officer at once.

b. It is comparatively simple by attention to personal cleanliness to destroy full grown lice, but the eggs are killed with difficulty for they are deposited in the seams of both underclothing and outer clothing. Body lice may be destroyed by thoroughly brushing the clothing and applying heat, as with a hot iron, devoting special attention to the seams. Gasoline will kill the adult lice but not the eggs. If not eliminated by these means, a medical officer should be consulted.

c. Head lice may be eliminated by clipping the hair short and applying a solution of vinegar followed by an application of kerosene to the scalp. The scalp should be thoroughly shampooed several hours later and search made for eggs that may have escaped destruction.

d. Crabs or pubic lice may be destroyed by shaving and bathing thoroughly the parts involved, followed by the application of a suitable disinfectant supplied by the Medical Department.

6. Rules for avoiding disease during field service.—*a.* Do not drink water which has not been certified to by a medical officer unless it has been boiled or purified in a water sterilizing bag (Lyster bag) by hypochlorite powder issued by the Quartermaster Corps. Water from the sterilizing bag should be taken

from the faucet into a cup or canteen. Taking water by dipping a cup into the bag or putting the lips to the faucet should be prohibited.

b. Do not soil the ground with stools or urine. Always use the latrine or the night urine can provided in the company street.

c. Be sure that the mess kit, knife, fork, and spoon are thoroughly washed in soapy water and rinsed in boiling water after they are used.

d. Use a mosquito bar in regions where mosquitoes are prevalent. See that it is well tucked in and is free from holes.

e. Do not sit or lie directly on the damp ground. Avoid drafts when perspiring or while the clothing is damp.

f. Ditch the tents as soon as put up, even if the camp is only for one night.

g. Prepare the beds before dark. In temporary camps or bivouac raise the beds if suitable material such as straw, leaves, or boughs can be obtained. Raincoats should be used as a ground sheet.

h. Never use a cup which is used by others. Do not exchange pipes, cigars, musical instruments played with the mouth, gas masks, handkerchiefs, towels, or shaving outfits.

i. In camp where water is plentiful, drink plenty of water at intervals during the day but do not drink a large amount at one time either in camp or on the march, especially when overheated after exertion. On the march do not drink water every time you feel thirsty. The rule should be to drink as little as possible at a time and endeavor to arrive at the end of the march with some water still left in the canteen.

j. Acquire the habit of having the bowels move regularly once each day and as nearly the same time as possible.

k. Wear clothing of proper weight for the climate. Clothing should fit loosely. Wet clothing, particularly shoes and socks, should be changed as soon as opportunity permits.

l. Keep the hair cut short and the finger nails clean.

m. Never throw pieces of food or refuse around the camp or in the trench. Such debris draws flies and flies frequently carry disease.

n. If possible avoid all contact with diseased persons.

o. Avoid venereal diseases. These diseases are almost always contracted by sexual intercourse with an infected woman. If sexual intercourse is had, report as soon as possible (at least within 2 hours after exposure) to the hospital or other designated place for "prophylaxis." This prophylactic treatment must be carried out thoroughly and the directions followed exactly if its full protective value is to be obtained.

7. Rules for officers.—a. Immediately upon arrival in camp, place a guard over the water supply. See that the stream is properly policed and marked for use. Designate points along the stream for use of water, beginning upstream, as follows:

- (1) Drinking and cooking.
- (2) Watering animals.
- (3) Bathing.
- (4) Washing clothing.

b. Make such arrangements as may be necessary to purify the water used for drinking and cooking purposes, whether the purification is by boiling or by sterilization in the water bag. Check up on the care with which purification is carried out.

c. See that latrines are prepared as soon as possible after arrival in camp and that they are placed to the leeward of the camp at least 75 feet from the nearest tent or quarters and at least 100 yards from any company kitchen. Also see that the latrines are at least 100 yards from any used well or spring and that they are so ditched that storm water cannot flood the area and thereby spread excrement over the surface of the ground.

d. Camps must always be kept clean.

e. Inspect the feet of the men periodically and at the end of each day's march. See that they do not neglect them.

f. See that the men get opportunities to bathe and to wash their clothing.

g. Rest the men as much as possible. At halts have them sit or lie down.

h. Watch the men and see that every man who falls out often on the march, or any man in camp observed going to the latrine oftener than usual, is seen by a medical officer at once. The serious diseases of camp life may often begin with diarrhea and this should be looked upon as a danger signal.

i. Insure proper ventilation of quarters, especially at night. Bedding should be aired twice a week. Tent walls should be rolled daily and the tents furled once a week, weather permitting.

j. Avoid overcrowding men. This leads to the spread of respiratory diseases and vermin, especially body lice. The heads of soldiers while sleeping should be at least 5 feet apart. If there is not this distance between men, they should sleep with their heads and feet alternating; that is, the head of each man opposite the feet of the man on either side of him.

k. See that cooking is carried out in as sanitary a manner as possible and that food is protected from dirt and flies, both before and after cooking. Have food products whose condition is doubtful inspected by a medical officer before being used.

l. Clothing is intended to protect from heat, cold, and damp. See that the men use it accordingly.

m. Keep garbage receptacles about the kitchen covered. If fuel is available, construct an incinerator for the destruction of kitchen waste. An undue number of flies in camp is a reflection on the company officers.

n. Provide facilities for thoroughly washing mess kits and for rinsing them in boiling water.

o. Talk to your men on sex hygiene and on the drinking of intoxicating liquor to excess.

p. Have men start on the march and go on outpost or trench duty with full canteens. Cold, weak tea (without milk or sugar) tends to assuage thirst.

q. See to it that your camp is policed daily after breakfast and all refuse matter burned.

r. See that every man has had a successful vaccination for smallpox and is revaccinated when a new case occurs in the organization and that he has had three injections (given at 7 to 10 days' intervals) against typhoid and paratyphoid fever within the last 3 years.

s. Observe the regulations governing physical inspections and the inspection of food handlers and barbers.

SECTION II

FIRST AID

8. General.—The following points are important for those who may be called upon to render first aid to the injured:

- a.* Keep cool.
- b.* Act quickly.
- c.* Make the patient sit or lie down.
- d.* Expose and examine the injury.
- e.* Be gentle in handling the wounded man.
- f.* Do not attempt to do too much.
- g.* It is better to obtain medical assistance for the seriously injured than attempt to transport them.
- h.* Do not touch a wound with anything unclean, such as fingers, unsterilized dressings, and water that is not sterile.
- i.* Supply warmth as soon as possible to prevent shock.

9. Treatment of wounds.—*a. General.*—The immediate dangers to life from severe wounds are hemorrhage and shock. The great danger from all open wounds is infection which may occur and delay healing or cause blood poisoning. First-aid treatment is, therefore, directed toward the treatment of hemorrhage and shock, if present, and the prevention of infection. The care and promptness of general first-aid treatment and the application of the first-aid dressing are of the utmost importance in influencing the final outcome of the case. It is better to leave a wound undressed and attempt no first-aid treatment than to do it carelessly or ignorantly.

b. Application of first-aid treatment.—Application of first-aid treatment to the wounded includes such of the following steps as are indicated:

(1) Expose the wound for examination and treatment by unbuttoning, unlacing, ripping, or cutting the clothing, shoes, leggings, or boots, being careful to avoid touching the wound with the fingers, clothing, or other unclean objects.

(2) Control bleeding. (See par. 10.)

(3) Prevent infection by the application of a sterile dressing, preferably that from a first-aid packet. (See *c* below.)

(4) Take every precaution to prevent shock but if it occurs, treat it. (See par. 11.)

c. Application of first-aid dressing.—(1) When a missile enters or goes through the muscles or soft parts alone, generally nothing need be done except to protect the wounds with the contents of the first-aid packet. Make no attempt to clean the wound.

(a) *One wound.*—If the first-aid packet is of the old pattern, containing two packages, carefully remove paper from one of the packages without unfolding the compress or bandage and hold by grasping the outside folds of the bandage between the thumb and fingers. When ready to dress wound, open compress by pulling on the two rolls, being careful not to touch the inside of the compress with the fingers or anything else. Still holding one roll of the bandage in each hand, apply the compress to the wound, then wrap the bandage around the limb or part and tie the ends together or fasten with safety pins. The second compress or bandage may be applied over the first; it may be used for a sling, if the arm is wounded; or it may be used to bind both legs together, if one is injured.

(b) *Two wounds.*—If two wounds are opposite each other, apply to one wound an opened compress without unrolling the bandage, and to the other an opened compress, holding both dressings in place with the bandage of the latter. For two wounds not opposite each other, tie the compress over each.

(c) *Large wound.*—If the wound is too large to be covered by the compress, find and break the stitch holding the compress together, unfold it, and apply as directed in (a) above. If the contents of one packet are not large enough to cover a wound thoroughly, use several.

(2) The new pattern packet contains only one dressing. To apply it remove the wrapper and put unpapered side of compress next to the wound, employing the same precautions and principles as set forth in (1) above.

10. Hemorrhage.—*a. Varieties.*—There are three varieties of hemorrhage (bleeding) as follows:

(1) *Arterial.*—An arterial hemorrhage is when bleeding occurs from the arteries and is the most dangerous because of the great amount of blood which may escape in a short time. The blood spurts from the artery with each pulsation of the heart and is bright red in color.

(2) *Venous*.—A venous hemorrhage is bleeding from the veins. The blood flows in a steady stream and is dark red in color.

(3) *Capillary*.—A capillary hemorrhage means bleeding from very small blood vessels and is manifested by oozing of blood from the wound. It is the least dangerous variety.

b. Control.—Hemorrhage is controlled by natural or artificial means. In the natural way a blood clot forms in the wound, preventing the further escape of blood. Capillary hemorrhage usually stops in this way. Venous and arterial, depending on the severity, usually require one or more artificial means as follows:

(1) *Pressure of the fingers*.—For quick control of arterial hemorrhage, press upon the blood vessel between the wound and the heart. Examples of finger pressure for control of arterial hemorrhage are as follows (figs. 1 to 5):

(a) *Scalp*.—Apply pressure with the tips of the fingers in front of the ear just above where the lower jaw can be felt working in its socket. A branch of the temporal artery crosses the temple on a line between the upper border of the ear and the upper border of the eyebrow.

(b) *Neck and head*.—Press the thumb and fingers deeply into the neck in front of the strongly marked muscle which reaches from behind the ear to the upper part of the breast bone.

(c) *Shoulder and armpit*.—Press the thumb deeply into the hollow behind the middle of the collar bone. This compresses the large subclavian artery.

(d) *Arm or hand*.—Press outward against the bone just behind the inner border of the large muscle (biceps) of the arm. This compresses the brachial artery.

(e) *Thigh, leg, or foot*.—Press strongly with the thumbs at the upper part of the inside of the thigh where the large artery passes over the bone. This compresses the femoral artery.

(2) *Elevation*.—The use of this simple means usually stops capillary hemorrhage of the limbs and may suffice for the control of slight venous and arterial hemorrhage of the arms, hands, legs, and feet.

(3) *Tourniquet*.—(a) If bleeding from a limb continues after employment of means described above, a tourniquet should be used. This consists of a pad which is placed on the line of the

artery and a strap that goes over the pad and around the limb so that when tightened it will press the pad down upon the artery and interrupt the flow of blood. A pad may be made of

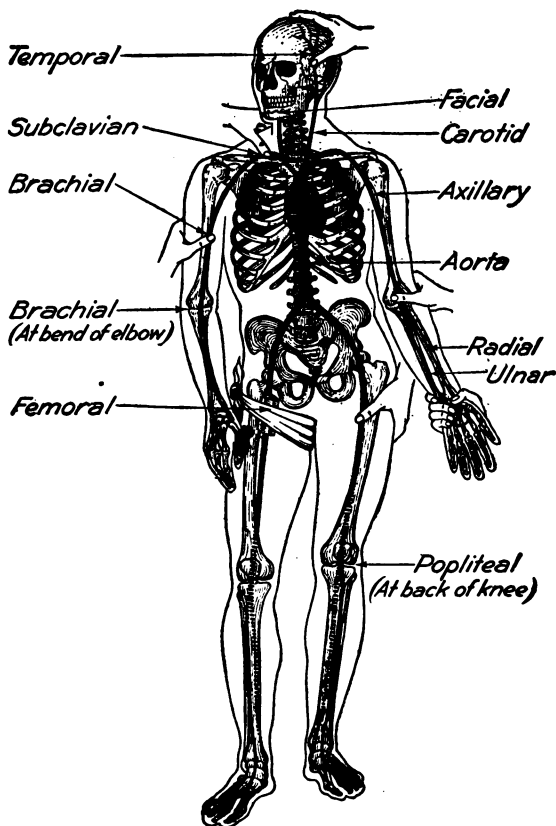


FIGURE 1.—Course of arteries and pressure points.

a small stone or other hard object wrapped in some material to make it less rough. The strap may consist of a bandage, belt, handkerchief, cravat, or similar article.

(b) For the arm the tourniquet is applied over the point described for compression by the fingers. For the thigh and leg it is applied 4 or 5 inches below the groin. After tying the band loosely around the limb the required degree of pres-

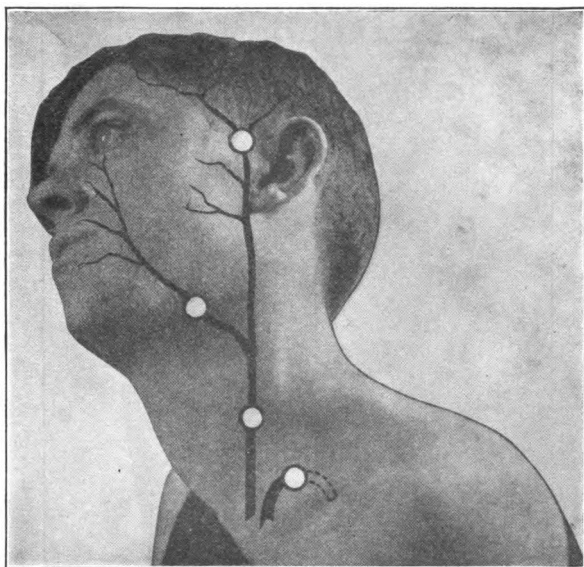


FIGURE 2.—Course of arteries and pressure points: Head and neck.

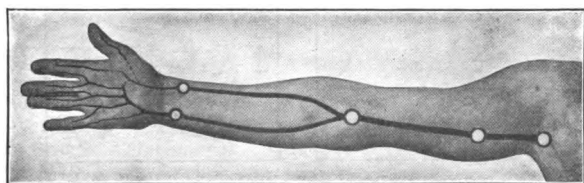


FIGURE 3.—Course of arteries and pressure points: Upper extremity.

sure is made by passing a stick or bayonet under the band but diametrically opposite the pad and twisting it so that the pad is pressed down firmly upon the blood vessel. The stick is turned slowly and stopped at once when the blood ceases

to flow. The stick is then fixed in place with another bandage. Harm may be done if too much force is used or if the pressure is kept up too long. It is a good rule to relax the pressure

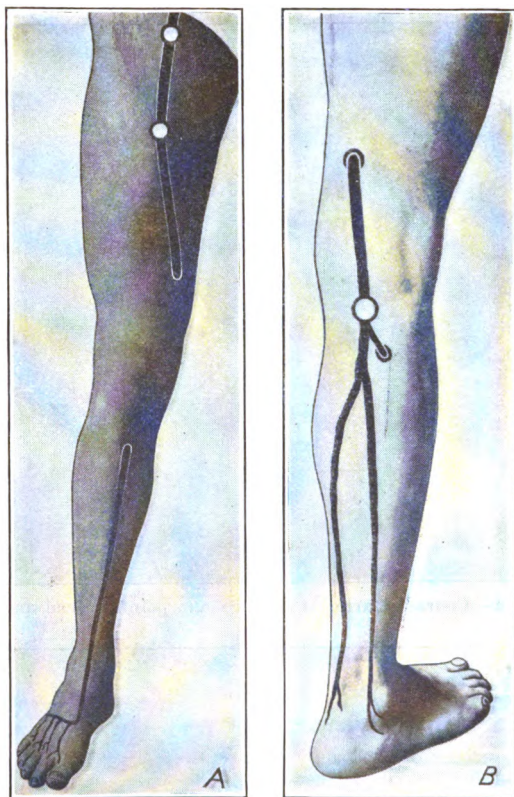


FIGURE 4.—Course of arteries and pressure points, lower extremity :
A, front view ; B, back view.

at the end of an hour and allow the sticks to remain loose, but in place, if no bleeding appears. The tourniquet can be tightened again if necessary.

(c) In the use of the tourniquet the following precautions should be observed:

1. Never cover the tourniquet with a bandage.
2. Attach some kind of tag to the man plainly marked "tourniquet", giving the date and hour when applied.
3. If the injured man is conscious, instruct him to tell every medical officer who sees him that he has on a tourniquet.
4. The tourniquet should be loosened every hour or the limb may die. If bleeding occurs it can be tightened again.

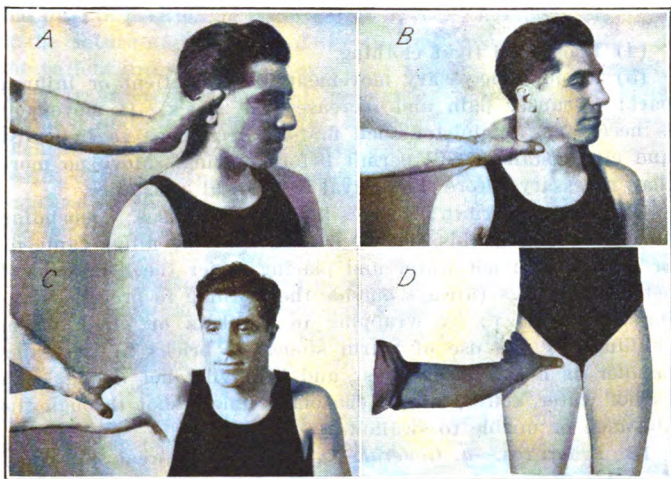


FIGURE 5.—Pressure points: A, temporal pressure point; B, carotid pressure point; C, brachial pressure point; D, femoral pressure point.

11. Shock.—*a. General.*—Shock is a sudden vital depression due to injury or emotion which makes an untoward impression upon the nervous system. It may be slight and transient, or prolonged and even fatal. When circumstances permit, the patient in shock should be supplied with warmth and stimulation before attempting transportation. This will be difficult and in most instances impossible on the field of battle but it

should be attempted. If immediate removal is necessary, treatment for shock should be instituted at the earliest opportunity.

b. Symptoms.—(1) The face is pale, pinched, and it has an anxious and frightened appearance.

(2) The patient feels weak, faint, and cold.

(3) The skin is cold and clammy to the touch.

(4) The pulse is weak and rapid.

(5) The breathing is sighing and irregular.

c. Treatment.—(1) Control the hemorrhage. (See par. 10.)

(2) Get medical assistance to the patient as soon as possible.

(3) Place the patient in a horizontal position with the head low.

(4) Loosen all tight clothing.

(5) Avoid unnecessary movement of the patient or injured part; it causes pain and increases the shock. If movement is necessary, administer such first-aid treatment as indicated and circumstances will permit before moving. Move no more than necessary before the arrival of medical assistance.

(6) Supply warmth; it saves lives in such cases. Depending on circumstances, this may be accomplished by filling canteens or bottles with hot water and placing under the armpits and between the legs (always outside the clothing to prevent burning or scalding); by wrapping in blankets or other warm clothing; by the use of warm stones or bricks in the same manner as hot water bottles; and by giving hot drinks such as hot water, coffee, tea, or chocolate, unless shot through the abdomen or unable to swallow.

12. Fractures.—*a. General.*—A fracture is a break in a bone. A *simple fracture* is one in which there is no wound extending from the broken bone through the skin. A *compound fracture* is one in which the wound extends from the broken bone through the skin and therefore is exposed to the dangers of infection from the outside. A *complicated fracture* is one where there is damage to adjoining large vessels, nerves, or muscles, which are contributing factors in causing shock. In no injury is the ultimate outcome more influenced by the character of first-aid treatment than in fractures. Improper handling or immediate transportation may produce or aggravate shock and therefore deprive the patient of a chance for recovery. All fractures or suspected fracture cases should be handled gently.

It is equally as important to know what not to do as to know what to do. In certain cases immediate movement or transportation is very detrimental and first-aid treatment should be administered and medical assistance brought to the patient rather than an attempt made to transport him to the doctor. This is especially true of fractures of the thigh, pelvis, or back, and where there is evidence of shock. In any event, depending on the severity and nature of the case, one or more of the general first-aid measures are usually indicated.

b. First-aid treatment.—(1) *General.*—Except where the bone is protruding, straighten the limb, if necessary, by gently but firmly pulling upon the end of the extremity. Fix or retain the limb in position by issue splints or other available material, if the nature and severity of the fracture and the condition of the patient are such as to permit his walking or being immediately transported to medical assistance. For splinting, many common materials will do for immediate and temporary use, such as shingles, pieces of board, carbine boots, bayonet scabbards, chicken wire, a rain spout cut and fitted to the limb, or bunches of twigs. It is important that the splints be well padded on the side to be applied next to the skin and that they be securely bound by bandaging or by tying above and below the point of fracture, but not over it. In fractures with wounds or hemorrhage these complications should be treated before the application of the splints. (See pars. 9 and 10.)

(2) *Application of splints.*—(a) *Fracture of the forearm.*—With the forearm flexed to a right angle, thumb up, apply a splint to the inner surface, extending to the tips of the fingers, and another to the outer surface, extending to the wrist.

(b) *Fracture of the upper arm.*—Apply two splints, one in front, and the other behind, if the lower part of the bone is broken; apply to the inner and outer sides, if the fracture is in the middle or upper part; support by a sling.

(c) *Fracture of the collarbone.*—Flex forearm to a right angle in front of the body and use a sling.

(d) *Fracture of the leg or ankle.*—Apply two splints, one on the outside, the other on the inside of the limb, extending from just below the knee to beyond the foot.

(e) *Fracture of the thigh.*—Administer first-aid treatment to the injured person where he lies. Splinting should not be attempted by the inexperienced unless unusual circumstances

make it necessary that the patient be moved some distance at once. Proper traction applied to the limb below the fracture is absolutely essential to provide effective first-aid treatment which will permit transportation without danger of producing further injury and shock. To do this requires a special splint applied by one experienced in its application. If the patient must be moved, carry gently as short a distance as possible, paying special attention to the support of the injured limb in the extended position.

(3) *Slings*.—Fractures of the upper extremities should be supported by a sling after splinting. Arm slings may be made of bandages, if available, or may be improvised from the ordinary clothing by using safety pins to fasten the coat sleeve to the front of the coat to support the arm. The coat flap may be used for the same purpose by pinning or by punching a hole through the lower edge of the flap and buttoning this to a coat button.

13. Poisonous bites and stings.—*a. Snake bites*.—First-aid treatment of snake bites should be directed toward preventing the passage of the poison into the general circulation. Snake venom acts quickly, and therefore first-aid measures must be applied immediately. To prevent absorption of the venom, apply a tourniquet between the bite and the heart. Make cross-cut incisions through the bite and also into the surrounding swollen tissue. Then get the poison out of the wounds by sucking blood from the cuts. This is the most important part of the treatment. Venom can be extracted by suction as late as 3 to 7 hours after a bite; therefore, suction should be continued. Alcohol, kerosene, permanganate of potash, and empirical remedies are useless. Cauterizing agents are harmful. Be sure to keep the patient quiet and take steps to prevent shock. If shock develops, treat as outlined in paragraph 11.

b. Insect bites and stings.—Bites from scorpions and spiders and stings from bees, wasps, and similar insects are treated by applying locally a solution of ammonia or soda.

c. Animal bites.—First-aid treatment for ordinary wounds may be administered, but medical advice should be sought as soon as possible as the bite might have been from an animal with or suspected of having rabies, in which case the wound should receive special treatment.

14. Fainting.—This condition may result from injury, slight or severe bleeding, exhaustion, and emotional disturbance. It is directly caused from too little blood in the brain. The treatment is to place the patient upon his back with the head lowered and the feet elevated. Loosen the clothing. Fresh air should be provided by preventing crowding around the patient, by opening the doors and windows, or by taking the patient into the open. Apply cold water to the face and let him inhale smelling salts (ammonia).

15. Poisoning.—*a.* If there is no evidence of caustic action, an effort should be made to empty the stomach and bowels by the free use of emetics and laxatives. A tablespoonful of mustard or of common salt in a cup of warm water may serve to produce vomiting. Salts or castor oil may be used as a cathartic. The cathartic should not be given until the vomiting resulting from the emetic has subsided. After the poison has been evacuated, give stimulants, apply heat, and rub externally. When the lips are burned, give no emetic but administer olive oil, cotton-seed oil, castor oil, or milk, internally. Also give the proper antidote, if known.

b. In cases of opium poisoning, resuscitation by artificial respiration may be required. (See par. 16.)

16. Drowning.—Being under water for 4 or 5 minutes is generally fatal, but an effort to revive the apparently drowned should always be made unless it is known that the body has been under water for a long time. It is very important that artificial respiration be commenced at the earliest practicable moment as soon as the patient is on shore or in a boat and it must be continued an hour and a half or 2 hours before the case is considered hopeless. After the patient begins to breathe, watch carefully to see that he does not stop breathing, and when he breathes faintly assist him with artificial respiration. Do not attempt to raise the patient nor allow him to rise until breathing has become regular. As soon as the patient is removed from the water, lay him face down and, grasping him around his waist, raise his hips so that any water may drain out of the air passages while the head remains low. Use only a few seconds for this, then proceed as follows with artificial respiration (Schaefer method):

a. The man is laid on his belly, his face turned to one side so that the mouth and nose do not touch the ground, his arms

extended above his head. In this position the tongue does not obstruct the air passages but falls forward of its own weight, and the removal of any foreign body from the throat is facilitated. To insure that the throat is not obstructed, the tip of the tongue may be pulled forward out of the mouth.

b. The operator kneels, straddling one or both of the patient's thighs facing the patient's head, and places his hands, with the thumb nearly parallel to the fingers so that the little finger curls over the end of the lowest rib. The lower margin of the hand must be free from the pelvis and resting on the lowest rib. The ribs can be more easily located and the pelvis avoided by operating on the bare back of the patient.

c. The farther from the backbone the heels of the hands can be placed without sliding off, the better the position. Thus the hands are several inches from the spine and the fingers nearly out of sight. The fingers help some, but the chief pressure is exerted by the heels of the hands, the weight coming straight from the shoulder. The operator's arms should be held straight and pressure exerted from his shoulders by bringing his body and shoulders forward. This weight is gradually increased until at the end of 3 seconds of vertical pressure on the lower ribs of the patient the force is felt to be sufficient to compress the parts, then the weight is suddenly removed. If there is danger of not returning the hands to the right position, they may remain lightly in place, but it is usually better to remove the hands entirely.

d. With a heavy patient a light operator can utilize over 80 percent of his weight by raising his knees from the ground and supporting his weight entirely on his toes and the heels of his hands, if the latter are properly placed on the ribs of the patient. Due care should be observed to prevent fracture of the ribs by bearing too violently on them.

e. A feather or a few fibers of absorbent cotton held near the patient's nose will indicate whether or not air passes with each forced expiration and spontaneous inspiration. The rate of compression should not exceed 12 or 15 per minute, the lungs being thoroughly emptied by 3 seconds of pressure and allowed 2 seconds to refill. Recoveries after 2 hours or more of unconsciousness are on record.

f. Aromatic spirits of ammonia on a handkerchief may be placed continuously within 3 inches of the nose; no liquid

should be given while unconscious; apply warm blankets and hot water bottles as soon as practicable.

17. Gas.—*a. Poisoning.*—If poisoned by gases met with in civil life (illuminating, charcoal, motor exhaust, mines), remove patient to the open air and apply artificial respiration and warmth.

b. Injuries.—In the treatment of injuries from gases used in warfare, the following rules apply:

(1) Wear mask and gloves, if possible, when handling a gassed man. If gloves are not worn, wash hands with soap and water following the handling of such cases; or better, rub them with dry lime.

(2) Remove the patient's equipment, but not his mask if the air is permeated with gas.

(3) If possible, remove all gassed cases from woods or low ground to knolls or hillsides. Do not carry them into dugouts or cellars; gas being heavier than air seeks the lower levels. Do not allow badly gassed cases to walk.

(4) In mustard gas injury the essential treatment is, first, removal of clothing; second, neutralization of the gas with an alkaline substance, if available; third, avoidance of contact with gassed clothing; fourth, treatment of the skin, eyes, or other affected parts with a weak soda solution.

(5) Do not bandage the eyes if they are affected.

18. Freezing.—*a.* The symptoms of frostbite are cold in the part, pain, then loss of sensation. The part affected becomes white or bluish white; it should not be warmed before the fire but rubbed with snow or with a cloth dipped in cold water wrung dry. After the part has been rubbed well, dry it thoroughly and smear it with grease. If the symptoms continue, the part will become swollen and change color. If this occurs it is dangerous and medical attention is necessary.

b. When a man becomes unconscious from cold, if possible carry him into a room without a fire, remove the clothing and rub vigorously with snow or with wet cloth until signs of returning circulation are observed. When warmth and consciousness return, give him warm tea, cover him up warmly, and let him remain quiet.

19. Sunstroke.—In case of sunstroke, the face is flushed, skin hot and dry, breathing labored, pulse rapid, and the heat of body great. The patient may be unconscious. Place him

in the shade, loosen his clothing, and try to lessen the heat of the body by liberal cold applications and fanning.

20. Heat exhaustion.—Heat may also cause a form of exhaustion without fever or insensibility. In this case the skin is cold. Rest in the shade with cold applications to the head and a little aromatic spirits of ammonia are usually sufficient to relieve this condition.

21. Burns and scalds.—Do not pull the clothing from the burned part but rip or cut it off. Do not break the blisters nor prick them even if large. Take steps to prevent shock or treat it if present. (See par. 11.) When possible, protect the burn quickly with a dressing, preferably from first-aid packet, soaked with one of the following liquids:

- a.* Solution of tannic acid.
- b.* Linseed, olive, or cottonseed oil.
- c.* Solution of picric acid.
- d.* Solution of soda.

22. Blisters.—Should a foot blister occur while marching, it is better to protect it immediately. Remove the shoe and sock and if the blister is unbroken, prick it with a pin previously sterilized by holding in the flame of a match, and allow the fluid to escape. Then cover the entire blister with adhesive plaster.

23. Electric shock.—*a. Symptoms.*—Persons suffering from such injuries are usually unconscious; the pulse is feeble and irregular and the breathing slow and faint. The parts of the body that have come in contact with a live wire are burned and blistered.

b. Treatment.—(1) The most important thing to do is to remove the person from contact with the wire or electrical machinery. This is always dangerous and should not be attempted until some means of insulation is available. The hands should be protected with rubber gloves, a rubber blanket, a mackintosh coat, or several thicknesses of silk or dry clothing. The rescuer should be further insulated by standing on a rubber mat or pane of glass or dry board.

(2) The treatment of electric shock is the same as ordinary shock following an injury or accident (see par. 11). The heart and respiration should be stimulated, the body kept warm by the application of heat, and artificial respiration used if indicated (see par. 16). Patients who are likely to recover

will show signs of life within 25 minutes; however, the patient should be given the benefit of the doubt.

(3) The treatment of electric burns is the same as for ordinary burns.

24. Removal of foreign bodies.—*a. From the eye.*—(1) Close the eye and allow the tears to accumulate. Do not rub the eye. After a few minutes open it again and the foreign body may be washed out by the tears. If the foreign body is under the lower lid, pull the lid down and have the patient roll the eye up and the foreign body may be easily brushed out by the corner of a clean handkerchief or a small swab made by wrapping a little cotton around the end of a match.

(2) If, as usual, the foreign body lies under the upper lid, grasp the eyelashes of the upper lid with the index finger and thumb of the left hand; place a match or pencil held in the right hand over the middle of the upper lid; then turn the lid over the match and the foreign body may be seen and removed.

(3) Where pieces of steel or emery have become imbedded in the eyeball itself, they should be removed only by a surgeon.

(4) When acid is splashed into the eye, an alkaline preparation made from soda, magnesia, chalk, or lime should be used.

(5) When strong alkalies get into the eye, weak acid solutions such as diluted vinegar or lemon juice are employed.

b. From the throat.—(1) As the result of sudden interference with the breathing, the person clutches at his throat and gasps for air. There may be violent coughing or attempts to vomit, the face becomes blue, and the eyes stick out of their sockets.

(2) If another person is at hand, have him go or telephone for the nearest physician, notifying him of the nature of the accident so that he may bring the proper appliances. In the meantime attempt to dislodge the foreign body by slapping the back violently between the shoulder blades. If this is not successful, hold the patient by his feet with the head down and have someone slap his back between the shoulder blades.

c. When swallowed.—When dangerous bodies have been swallowed, do not give an emetic or cathartic, for such treatment would only make matters worse. Make the patient eat freely of bread and potatoes in order that the foreign body may be surrounded by a mass of soft material and in that way be carried safely through the bowels.

25. Epileptic fits.—During an epileptic fit the patient frequently utters a peculiar cry before falling, immediately becomes unconscious, and falls into convulsions, jerking the arms, legs, and body. The face becomes deathly pale, the eyes roll and are turned upward. There may be foaming at the mouth and if the tongue is bitten the foam is bloody. Nothing can be done to stop the fit after it has begun. The patient should be placed flat on his back, preferably on a mattress or some other soft material so that he cannot injure his head or limbs by striking them against anything hard. Place a rolled handkerchief between the teeth in order to prevent him from biting his tongue. Do not use any force or struggle with an epileptic. Following the convulsion the patient is usually drowsy and sleeps for several hours.

26. Concussion of the brain.—When a concussion of the brain occurs, the patient becomes pale, feels weak and dizzy, and sometimes loses consciousness. He may be sick at the stomach. He should be kept absolutely quiet, the head slightly raised and heat applied to the extremities and body; the head should be kept cool by cold cloths or cracked ice. Do not give stimulants.

27. Compression of the brain.—A compression of the brain results from head injuries. The patient cannot be roused. There may be bleeding from the nose and ears. The breathing is deep and snoring and there is usually paralysis as in apoplexy. Send for a medical officer. Raise the head, loosen the tight clothing, and keep the patient warm. Stimulants must not be given.

28. Apoplexy.—When suffering a stroke of apoplexy the person suddenly becomes unconscious. The face is flushed, one or both pupils dilated, the breathing abnormal, and the cheeks puff out with each expiration. There is usually paralysis of one side of the body. This may be determined by lifting up the hands and legs and allowing them to fall slowly to the side. The one that is paralyzed will be cold and lifeless and will drop like a dead weight. Give treatment as prescribed for compression of the brain in paragraph 27.

29. Alcoholic intoxication.—An ordinary case of intoxication does not require any particular treatment. Always remember the possibility that a person may be suffering from apoplexy or head injury. Try to produce vomiting by giving

a tablespoonful of salt or mustard in a cup of warm water. One teaspoonful of aromatic spirits of ammonia in a cup of water is useful to help sober a drunken person.

30. Wood-alcohol poisoning.—When you suspect that a patient has taken wood alcohol, send for a medical officer. Meanwhile keep the patient warm and cause him to vomit if you have any of the ordinary means at hand. This poison may cause total blindness.

31. Methods of removing wounded.—*a. With litter.*—The carriage of patients for moderate distances is best done with the service litter, and when that cannot be procured, by some improvised substitute which secures the comfort and safety of the disabled. Many things can be used for this purpose, some of which are as follows:

(1) Camp cots, window shutters, doors, benches, and ladders, properly padded.

(2) Sacks, bags, or bedticks, by ripping the bottoms or snipping off the corners, passing two poles through them and tying cross pieces to the poles to keep them apart.

(3) A shelter half, a blanket, piece of matting or carpet may be fastened to poles by tacks or twine.

(4) Hay, straw or leafy twigs, over a framework of poles and cross sticks, make an efficient litter.

(5) Rope, wire, or rawhide may be woven between poles and this network covered with a blanket.

(6) The usual military improvisation is with blankets or shelter tents, and poles about 7 feet long. The blanket is spread on the ground. One pole is laid across the center of the blanket which is then folded over it. The second pole is placed across the center of the new fold and the blanket is folded over the second pole as over the first.

(7) A litter may also be prepared by turning two or three blouses inside out and buttoning them up, sleeves in, then passing poles through the sleeves; the backs of the blouses form the bed.

b. Without litter.—(1) *The rifle seat.*—A good seat may be made by running the barrel of a rifle through each sleeve of an overcoat, turned inside out and buttoned up, sleeves inside, so that the coat lies back up, collar to the rear. The front bearer rolls the tail tightly around the barrels and takes

his grasp over them; the rear bearer holds by the butts, trigger guards up.

(2) *Rifle-blanket seat*.—A blanket being folded once from side to side, a rifle is laid transversely upon it across its



FIGURE 6.

center so that the butt and muzzle project beyond the edges; one end of the blanket is folded upon the other end and a second rifle laid upon the new center in the same manner as before. The free end of the blanket is folded upon the end containing the first rifle so as to project a couple of inches

beyond the first rifle. The litter is raised from the ground with trigger guards up.

(3) *One bearer.*—A single bearer may support a slightly injured man (fig. 6) or carry a patient in his arms (fig. 7) or



FIGURE 7.

on his back (fig. 8) or across his shoulders (fig. 9). If the patient is helpless the last named is best. This is effected as follows:

(a) The bearer, turning patient on his face, steps astride his body, facing toward the patient's head and with hands

under his armpits, lifts him to his knees; then clasping hands over abdomen, lifts him to his feet; next he seizes the right wrist of the patient with his left hand and draws the arm over the head and down upon his left shoulder; he now shifts



FIGURE 8.

himself in front, stoops, passes his right arm between the legs and grasps the patient's right wrist; with his left hand he grasps the patient's left hand and steadies it against his side when he rises.

(b) In lowering the patient the motions are reversed. Should the patient be wounded in such a manner as to require these motions to be conducted from the right side instead of left, as laid down, the change is simply one of hands, the motions proceed as directed substituting right for left and vice versa.



FIGURE 9.

(4) *Two bearers.*—The bearers take position at patient, one man between the patient's legs and one at his head, both facing toward his feet. The rear bearer, having raised the patient to a sitting posture, clasps him from behind around the

body under the arms, the front bearer passes his hands from the outside under the flexed knees; both rise together. This method requires no effort on the part of the patient but is not applicable to severe injuries of the extremities.

(5) *Horseback*.—(a) The help required to mount a disabled man will depend upon the site and nature of his injury. In many cases he is able to help himself materially. The horse, blindfolded if necessary, is to be held by an attendant.

(b) Once mounted, the patient should be made as safe and comfortable as possible. A comrade may be mounted behind him to guide the horse; otherwise, a lean-back may be provided, made of a blanket roll, a pillow, or a bag filled with leaves or grass. If the patient is very weak, the lean-back may be made of a sapling bent into an arch over the cantle of the saddle, its ends securely fastened.



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